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VI. *An Account of some Stones said to have fallen on the Earth in France; and of a Lump of native Iron, said to have fallen in India.* By the Right Hon. Charles Greville, F. R. S.

Read January 27, 1803.

THE experiments and observations made by EDWARD HOWARD, Esq. on certain stony and metalline substances said to have fallen on the earth, and the accurate description which the Count de BOURNON has given of those substances, have, in my opinion, fully established the following fact, namely, that a number of stones asserted to have fallen under similar circumstances, have precisely the same characters.

The stones from Benares, that from Yorkshire, that from Sienna, and that from Bohemia, were the whole which had then been seen in England. They all contained pyrites of a peculiar character: they all had a coating of black oxide of iron: they all contained an alloy of iron and nickel; and the earths which served to them as a sort of connecting medium, corresponded in their nature, and nearly in their proportions.

Since the publication of Mr. HOWARD's and Count de BOURNON's observations, I have received from France three additional specimens. Monsieur ST. AMAND very obligingly divided with me a specimen he had broken from a stone of about 15 inches diameter, preserved in the Museum of Bourdeaux, which stone fell near Roqueford, in the Landes, on the 20th August, 1789, during the explosion of a meteor; it broke

through the roof of a cottage, and killed a herdsman and some cattle. M. ST. AMAND also gave me part of a stone he had preserved in his collection ever since the year 1790, when a shower of stones, weighing from $\frac{1}{2}$ an ounce to 15 and 25 pounds each, fell in the parishes of Grange and Creon, and also in the parish of Juliac, in Armagnac; which fact was, at the time, verified by DUBY, Mayor of Armile, and published by BERTHOLON, in the *Journal des Sciences utiles de Montpellier*, in the year 1790.

The third specimen, I owe to the Marquis de DREE; it is a fragment, broken from a stone of 22 pounds weight, which fell near the village Salles, not far from Villefranche in Burgundy, on the 12th of March, 1798; this was also accompanied by a meteor.

I content myself with the mere recital of the facts, in confirmation of the observations presented to the Society, as these three additional specimens have precisely the same characters, texture, and appearance, as the others in my collection; and are scarcely, by the eye, to be distinguished from them.

I should not, perhaps, have troubled the Society with this account, as my friend the Marquis de DREE, whose knowledge in mineralogy peculiarly qualifies him to investigate these subjects, has given me hopes of seeing his observations on them published; but a new evidence has lately fallen into my hands, and is the only one I have met with that ascertains the origin of native iron, which, from analysis, had been suspected to have a common origin with the stones fallen on the earth. Conversing with Colonel KIRKPATRICK, whose researches have embraced both the literature and politics of India, and whose talents had placed him in very important situations in various

parts of India, I inquired whether he had ever heard of any instances similar to the explosion of the meteor at Benares in 1798. He told me, he could not recollect having heard or read of any other instance, excepting one in the Memoirs written by the Emperor JEHANGIRE, and of that he did not recollect the particulars. A few days after, having found the passage in the original Persian, he was so obliging as to translate it. I consider it as an authentic fact; for the Emperor JEHANGIRE was not a prince on whom his courtiers would idly venture to impose; and there can be little probability that an Aumil of a district should invent such a story, or be able to produce a substance apparently like iron, but which, on trial, differed from manufactured iron. Colonel KIRKPATRICK'S translation, I have obtained his leave to communicate, with his attestation, to the Royal Society.

Extract from the Memoirs of the Emperor Jehangire, written (in Persian) by himself, and translated by Colonel Kirkpatrick.

A. H. 1030, or 16th year of the reign.—The following is among the extraordinary occurrences of this period.

Early on the 30th of Furverdeen, of the present year,* and in the Eastern quarter, [of the heavens] there arose in one of the villages of the Purgunnah of Jalindher,† such a great and tremendous noise as had nearly, by its dreadful nature, deprived the inhabitants of the place of their senses. During this noise, a luminous body [was observed] to fall from above on the

* The first of Furverdeen of this year, (A. H. 1030,) corresponded with Saturday, the 27th of Rubbi ul Akhir; consequently, the 30th of Furverdeen fell on the 26th of Jummad ul Ouwul, or A. D. 1620.

† A purgunnah is a territorial division, of arbitrary extent. The purgunnah of *Jalindher* is situated in the Punjaub, and about 100 miles S. E. of Lahore.

earth, suggesting to the beholders the idea that the firmament was raining fire. In a short time, the noise having subsided, and the inhabitants having recovered from their alarm, a courier was dispatched [by them] to MAHOMMED SYEED, the Aumil* of the aforesaid Purgunnah, to advertise him of this event. The Aumil, instantly mounting, [his horse,] proceeded to the spot, [where the luminous body had fallen]. Here he perceived the earth, to the extent of ten or twelve guz,† in length and breadth, to be burnt to such a degree, that not the least trace of verdure, or a blade of grass remained; nor had the heat [which had been communicated to it] yet subsided entirely.

MAHOMMED SYEED hereupon directed the aforesaid space of ground to be dug up; when, the deeper it was dug the greater was the heat of it found to be. At length, a lump of iron made its appearance, the heat of which was so violent, that one might have supposed it to have been taken from a furnace. After some time it became cold; when the Aumil conveyed it to his own habitation, from whence he afterwards dispatched it, in a sealed bag, to court.

Here I had [this substance] weighed in my presence. Its weight was one hundred and sixty tolahs.‡ I committed it to a skilful artisan, with orders to make of it a sabre, a knife, and a dagger. The workman [soon] reported, that the substance was *not malleable, but shivered into pieces under the hammer.*§

Upon this, I ordered it to be mixed with other iron. Con-

* Aumil is a manager or fiscal superintendant of a district.

† A guz is rather less than a yard.

‡ A tolah is about 180 grains, Troy weight.

§ Literally, "it did not stand beneath the hammer, but fell to pieces."

formably to my orders, three parts of the *iron of lightning** were mixed with one part of common iron; and from the mixture were made two sabres, one knife, and one dagger.

By the addition of the common iron, the [new] substance acquired a [fine] temper; the blade [fabricated from it] proving as elastic as the most genuine blades of Ulmanny,† and of the South, and bending, like them, without leaving any mark of the bend. I had them tried in my presence, and found them cut excellently; as well [indeed] as the best genuine sabres. One of these sabres I named *Katai*, or *the cutter*; and the other *Burk-serisht*, or the *lightning-natured*.

A poet‡ composed and presented to me, on this occasion, the following tetrastich.

“ This earth has attained order and regularity through the
“ Emperor JEHANGIRE :

“ In his time fell *raw* iron from lightning :

“ That iron was, by his world-subduing authority,

“ Converted into a dagger, a knife, and two sabres.”

The chronogram of this occurrence is contained in the words *شعله، برق بادشاهی*, which signify “ the flame of the imperial lightning;” and give the year (of the Hegera) 1030.

N. B. The foregoing translation (which is nearly literal) has been made from a manuscript that has been several years in my possession; and which, although without date, bears marks of having been written at a remote period.

WM. KIRKPATRICK.

* This expression is equivalent to our term *thunder-bolt*.

† The name of the place here designed is doubtful.

‡ The poet is named in the original; but the name is not perfectly legible.